In the Claims

1. (currently amended) A sensor which is resistant to degradation at high temperature; said sensor comprising:

a substrate formed with a thin insulating coating from at least one noble metal and an oxide selected from the group consisting of: yttrium oxide, cerium oxide, zirconium oxide, and combinations of these;

a resistor, disposed on said substrate, formed from at least one noble metal and an oxide selected from the group consisting of yttrium oxide, cerium oxide, zirconium oxide, and combinations of these, and[[;]]

at least a first and second lead electrically connected to the resistor for transmitting an electrical signal.

2. (cancelled)

3. (original) The sensor of claim 1 wherein said resistor is deposited on said substrate.

4. (original) The sensor of claim 1 wherein said substrate comprises an insulator having a selected resistance value.

5. (cancelled)

6. (previously presented) The sensor of claim 5, wherein said noble metal of the thin insulating coating associated with said substrate comprises a platinum group metal.

7. (previously presented) The sensor of claim 5, wherein said noble metal of the thin insulating coating associated with said substrate comprises Pt/Rh.

8. (previously presented) The sensor of claim 5, wherein said resistor comprises platinum and said oxide associated with said resistor is dispersion hardened within grain boundaries and a main body of the platinum.

9. (original) The sensor of claim 8, wherein said resistor comprises yttrium oxide and zirconium oxide.

10. (original) The sensor of claim 1, wherein a varying temperature causes a varying resistance in the resistor.

11. (original) The sensor of claim 10, wherein an electrical power source is applied to the resistor.

12. (previously presented) The sensor of claim 11, wherein said power source comprises an electrical current source, which is applied to said resistor for generating an electrical signal.

13 (original) The sensor of claim 12, wherein said electrical signal comprises a varying voltage that correlates to the varying resistance of the resistor.

14. (original) The sensor of claim 13, further comprising a transducer and wherein the varying voltage is applied to said transducer.

15. (original) The sensor of claim 14, further comprising a transducer output that correlates to a temperature.

16. (original) The sensor of claim 15, wherein said transducer is a temperature measuring device.

17. (cancelled)

18. (original) The sensor of claim 1, wherein said resistor is adapted as a heat flux sensor.

19. (original) The sensor of claim 1, wherein said resistor is adapted as a resistance temperature detector for measuring localized temperature.

20. (original) The sensor of claim 1, further comprising a sheath to house the resistor.

21. (original) The sensor of claim 20, wherein said sheath further comprises at least one noble metal and an oxide selected from the group consisting of: yttrium oxide, cerium oxide, zirconium oxide, and combinations of these.

22. (original) The sensor of claim 20, wherein said sheath further comprises an alloy.

23. (original) The sensor of claim 20, further comprising an insulator for insulating the resistor from the sheath.

24. (original) The sensor of claim 23, wherein said insulation comprises a refractory material.

25. (original) The sensor of claim 23, wherein said insulation comprises Al_2O_3.

26. (original) The sensor of claim 23, wherein said insulation comprises MgO.

27. (original) The sensor of claim 1, adapted to operate up to 1700 °C.

28. (original) The sensor of claim 1 further comprising a third lead electrically connected to the resistor, for transmitting an electrical signal.

29. (original) The sensor of claim 28 further comprising a fourth lead electrically connected to the resistor, for transmitting an electrical signal.

30. (currently amended) A sensor which is resistant to degradation at high temperature; said sensor comprising:

a substrate formed with a thin insulating coating from at least one noble metal and an oxide selected from the group consisting of: yttrium oxide, cerium oxide, zirconium oxide, and combinations of these;

a resistor, disposed on said substrate, formed from an oxide selected from the group consisting of yttrium oxide, cerium oxide, zirconium oxide, and combinations of these, said oxide dispersion hardened within the grain boundary of at least one base metal selected from the group consisting of the noble metals and the precious metals, and combination of these; and[[;]]

at least a first and second lead electrically connected to the resistor for transmitting an electrical signal.

31. (original) The sensor of claim 30, wherein said base metal comprises a noble metal.

32. (original) The sensor of claim 31, wherein said base metal comprises a platinum group metal.

33. (original) The sensor of claim 32, wherein said resistor comprises platinum and said oxide is dispersion hardened within grain boundaries and a main body of the platinum.

34. (original) The sensor of claim 30, wherein said resistor is a resistance temperature detector adapted to measuring localized temperature.

35. (cancelled)

36. (original) The sensor of claim 30 further comprising a third lead electrically connected to the resistor, for transmitting an electrical signal.

37. (original) The sensor of claim 36 further comprising a fourth lead electrically connected to the resistor, for transmitting an electrical signal.

38. (currently amended) A method for manufacturing a sensor which is resistant to degradation at high temperatures comprising the steps of:

forming a resistor from at least one noble metal and an oxide selected from the group consisting of yttrium oxide, cerium oxide, zirconium oxide, and combinations of these;

providing a substrate;

depositing a thin insulating coating on the substrate of at least one noble metal and an oxide selected from the group consisting of yttrium oxide, cerium oxide, zirconium oxide, and combinations of these;

depositing said resistor on a substrate; and[[;]]

attaching at least a first and second lead electrically connected to the resistor for transmitting an electrical signal.

39. (cancelled)

40. (original) The method according to claim 38, further comprising the step of depositing the resistor on the substrate.

41. (original) The method according to claim 38, further comprising the step of forming the resistor by dispersion hardening the oxide selected from the group consisting of: yttrium oxide, cerium oxide, zirconium oxide, and combinations of these within grain boundaries and a main body of the at least one noble metal.

42. (original) The method according to claim 38, further comprising the step of applying a varying temperature to the resistor to cause a varying resistance in the resistor.

43. (original) The method according to claim 42, further comprising the step of applying electrical power to the resistor.

44. (original) The method according to claim 43, further comprising the step of electrically connecting an electrical current source to the resistor.

45. (original) The method according to claim 38, further comprising the step of generating an electrical signal that comprises a varying voltage that is a function of the varying resistance of the resistor.

46. (original) The method according to claim 45, further comprising the step of transducing the varying voltage to generate a transducer output.

47. (original) The method according to claim 46, further comprising the step of correlating the transducer output to a temperature.

48. (cancelled)

49. (previously presented) A sensor which is resistant to degradation at high temperature; said sensor comprising:

a substrate formed with a thin insulating coating from at least one noble metal and an oxide selected from the group consisting of: yttrium oxide, cerium oxide, zirconium oxide, and combinations of these;

a resistor, disposed on said substrate, formed from an oxide selected from the group consisting of: yttrium oxide, cerium oxide, zirconium oxide, and combinations of these, said oxide dispersion hardened within a grain boundary and body of platinum;

at least a first and second lead connected to the resistor for transmitting an electrical signal; and

a transducer.

50. (original) The sensor of claim 49, wherein a varying temperature causes a varying resistance in the resistor.

51. (original) The sensor of claim 50, wherein, a power source is applied to the resistor.

52. (original) The sensor of claim 51, wherein said power source comprises an electrical current source.

53. (original) The sensor of claim 52, wherein said electrical signal comprises a varying voltage applied to an input of said transducer.

54. (original) The sensor of claim 53, wherein said transducer generates a transducer output that correlates to an ambient temperature around said resistor.

55. (cancelled)

56. (original) The sensor of claim 49, wherein said resistor is a resistance temperature device adapted to measure ambient temperatures up to 1700 °C.

57. (original) The sensor of claim 49, wherein said resistor is a resistance temperature detector.

58. (original) The sensor of claim 49, wherein said resistor is a heat flux sensor.

59. (previously presented) A modular sensor system for generating and sending a signal from a sensor to a transducer comprising:

a sensor for generating a signal having,

a substrate formed with a thin insulating coating from at least one noble metal and an oxide selected from the group consisting of: yttrium oxide, cerium oxide, zirconium oxide, and combinations of these;

a resistor, disposed on said substrate, formed from at least one noble metal and an oxide selected from the group consisting of yttrium oxide, cerium oxide, zirconium oxide, and combinations of these, said resistor further having first and second conductors electrically connected thereto;

a transmit lead module for transmitting the signal to the transducer, said transmit lead module having,

a first transmit lead electrically connected to the first conductor;

a second transmit lead electrically connected to the second conductor, said second transmit lead comprising a different material than said first transmit lead;

an insulating layer within which said first transmit lead and said second transmit lead are located; and

an outer layer within which said insulating layer is located.

60. (cancelled)